METHOD AND SYSTEM FOR ESTIMATING A BASE-2
LOGARITHM OF A NUMBER

ABSTRACT

5   The present invention is directed to methods and systems for estimating the log base-2 of a fixed point binary number using a single polynomial for an entire possible range of input numbers. An estimation of the log base-2 of a fixed-point binary number in either hardware or software may be implemented using a minimal number of parameters. In particular, a single 2nd order or greater polynomial may be sufficient to

10   cover an entire range of input values for any arbitrary input word precision. The present invention provides a method and system for estimating a logarithm of a number where a linear approximation of a fractional part is determined and the linear approximation is implemented in a single polynomial function for estimating the fractional part for a range of input values. A circuit for generating an integer part and an estimate of a fractional

15   part of a logarithm may include a shift register for loading a valid input data and for generating an estimate of a fractional part and a counter for loading a total number of bits in an input data and for generating an integer part, wherein the circuit implements a single polynomial for generating an improved estimate of the fractional part.